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Stabilization of the motions of controlled mechanical systems by a regulator with delay

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Abstract

The problem of stabilizing the motions of a controlled mechanical systems is solved by a regulator with delay. The state of the system is specified by generalized coordinates and the motion of the system is governed by the Lagrange equations, where the kinetic energy is a positive definite matrix. The state of the system, all or some of the generalized coordinates, and the generalized velocities are constantly measured in the feedback loop, so that a control can be formed which depends on the system state on the interval. The control solves the problem of the uniform asymptotic stability of an equilibrium. The resulting solution makes it possible to expand the application of standard regulators and theoretically justify the solution of stabilization problems.

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